USDA United States Department of Agriculture
Natural Resources Conservation Service

Plant Chat

April Volume 25, Issue 3
A Newsletter Published by the Bismarck Plant Materials Center for NRCS Field Offices in North Dakota, South Dakota and Minnesota

Inoculating Legume Seeds

Many legumes are used in conservation plantings. It is commonly known that forage species such as alfalfa and clovers are legumes. Did you know that several of the common crop and cover crop species such as chickpeas, chickling vetch, cowpea, hairy vetch, common vetch, fava bean, lentil, medic, pea, soybean, sunn hemp, and sweetclover are also legumes? In gardens, there are legumes such as beans and peas, and in shelterbelts, there are leguminous trees/shrubs such as caragana, Kentucky coffeetree, honey locust, and false indigo. There are also native legumes such as purple prairieclover, leadplant, and Canada milkvetch being planted for restoration and pollinator habitat.

Rhizobia live in these root nodules and convert atmospheric nitrogen into a usable form for this native legume.

Plants of the legume family produce pods with seeds inside. They are often referred to as “nitrogen fixing”. Nitrogen fixing plants have a symbiotic (mutually beneficial) relationship with specific rhizobia bacteria that convert atmospheric nitrogen into a form usable to the plant or other organisms. The bacteria live on the plant roots in nodules where they are provided with nutrients from the plant. Each legume species has specific rhizobia iwhich they can form this relationship with. When planting a legume for the first time in a field, the chances of having the right rhizobia species present in the soil is questionable. Therefore, the addition of an inoculant is often recommended when seeding a legume. Inoculants are available in dry, granular, or liquid form. Some seeds are pre-inoculated prior to purchase. Choosing the appropriate rhizobia inoculant for a species is vital. As inoculants are cultures of living organisms, proper storage and proper application are key for success of the inoculant. Plant Materials Technical Note 5 Using the Appropriate Legume Inoculant for Conservation Plantings provides information on the benefits of inoculation, choosing the right inoculant, field conditions, inoculant handling and storage, inoculation procedures, and checking for nodulation. The publication also has a partial list of specific rhizobia and legume species that form symbiotic relationships. There are many benefits of inoculating legume seeds that you may want to consider when planning your next planting.

What do these plants have in common?

Answer on next page

pasque flower

showy lady's slipper

wild prairie rose

What Do These Plants Have in Common?

Each plant pictured above is a State flower. The idea of designating a State flower began at the Chicago World's Fair in 1893. In years following, each of the 50 States chose a flower that represented the history, culture, and environment of their State. The pasque flower, which can be seen in open, dry prairies early in the spring, is the State flower of South Dakota. The Minnesota State flower is the showy lady's slipper, a rare orchid species found in forested and open wetlands and moist woods. The wild prairie rose, with its pinkish-white flowers and bright red seed-filled fruit, grows in open lands such as prairies. It is the State flower of North Dakota.

Alkali sacaton

The Bismarck Plant Materials Center (PMC) continues to look for grass species that will provide cover on saline soils in the Dakotas. Previous studies by the PMC have identified select cool-season species that are adapted to the area and will tolerate these conditions. However, warm-season grass species are lacking. The PMC would like to evaluate alkali sacaton (*Sporobolus airoides*) as an option for planting on saline sites. Alkali sacaton is a warm-season, bunchgrass species native to the western half of the United States that is tolerant of salinity and dry conditions. In North Dakota and South Dakota, it is relatively scarce.

'Saltalk' and 'Salado' are cultivars released from PMCs in Texas and New Mexico, respectively. Performance and adaptation of warm-season grasses differ by point of seed origin. Adaptation trials in the Northern Plains have shown that seed sources of warm-season grasses generally can be moved 300 miles north or 200 miles south of their origin without serious adaptation difficulties. As Saltalk originated from Oklahoma collections and Salado from New Mexico parentage, winter hardiness and adaptability of these cultivars in North Dakota and South Dakota is questionable. In 2024, the Bismarck PMC planted seedlings of Saltalk at a saline site in southeastern North Dakota to evaluate adaptability. In 2025, Saltalk, Salado and a Nevada source (not released) of alkali sacaton will be planted on non-saline soils at the Bismarck PMC as part of a larger grass adaptability trial to evaluate winter hardiness.

In the future, the Bismarck PMC would like to compare performance and winterhardiness of Saltalk and Salado to alkali sacaton collections from North Dakota and South Dakota. If you know of a site where alkali sacaton may be growing or would like to make collections, please contact the Bismarck PMC for details. Information on alkali sacaton can be found at https://plants.usda.gov/DocumentLibrary/factsheet/pdf/fs_spai.pdf

Seedheads of these young alkali sacaton plants have fine/delicate branches.

Alkali sacaton can be a large bunchgrass.